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geological character of these countries. We have ample data from which to define their limits, except at the single point to which I have alluded in this paper, with regard to the S.W. extremity of Celebes.

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IV.—*On the Languages of Australia, being an extract of a Dispatch from Captain G. GREY, Governor of South Australia, to Lord Stanley. Communicated by his Lordship.*

I HAVE the honour to transmit to your Lordship an outline map of the continent of Australia, coloured so as to show the districts within which different dialects are spoken on that portion of the southern coast which lies between 115° and 141° E.

Five principal dialects are spoken within this range.

The first is spoken within the district comprehended between the 115th and 125th meridian.\*

The second dialect is spoken by the aborigines inhabiting the district lying between 125° and 136° E. This dialect is composed, in a great measure, of the languages which I have, in this dispatch, termed the first and third dialects, and which are spoken by the natives of Western Australia and those of the vicinity of Adelaide respectively.

The third dialect is that spoken by the natives inhabiting the vicinity of Adelaide and the country to the north of it, as far as it has yet been explored.

The fourth dialect is spoken by the tribes inhabiting the banks of the river Murray, as far southward as a point about 30 miles to the north of the junction of that river with Lake Alexandrina; and it extends thence to the northward along the Murray until its junction with the Darling, and from thence to the northward along the latter river as far as we have any acquaintance with its aboriginal tribes. No extensive vocabulary of this dialect has yet been collected, but I trust that in a few months I shall be able to forward one to your Lordship, as two gentlemen are at present engaged on this subject.

The fifth dialect is spoken by the aboriginal tribes inhabiting the shores of Lake Alexandrina, and it extends thence to the northward for about 30 miles along the banks of the Murray, and to the southward and eastward along the coast of Australia in the direction of Port Philip, to as great a distance as we are yet acquainted with the natives. I have on the present occasion

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\* Vocabularies of this and the two following dialects were previously sent home by Gov. Grey.—ED.







the honour to transmit a vocabulary of this dialect to your Lordship.

From the foregoing description and the accompanying map, your Lordship will perceive that these dialects (which, from their radical and grammatical resemblance, appear all to have had one common origin) have all extended themselves in the direction of the great natural features of the country.

The people speaking the first dialect appear to have extended themselves along the coast-line from the northward and westward. Those speaking the third dialect appear to have come from the northward along Lake Torrens and Spencer's Gulf, and to have spread themselves to the westward until they met the people speaking the first dialect, and from the amalgamation of the two the second dialect appears to have sprung.

The people speaking the fourth dialect appear to have come from the northward down the river Darling and its tributaries, and from thence down the Murray, until they were met by those who spoke the third and fifth dialects.

Those who speak the fifth dialect seem to have come along the coast from the eastward as far as Lake Albert and Lake Alexandrina, and from thence to have spread up the river Murray, until they were met by the other tribes who were coming from the northward.

Those tribes who have spread along the coast-line appear to have migrated with the greatest rapidity, or at all events to have occupied the greatest extent of country.

The only probable means of tracing the direction from which this continent was peopled appears to be that of studying the ranges of the various dialects, and the directions in which they have spread, in the manner I have exhibited on the accompanying map; and as the lapse of every year renders the accomplishment of this object more difficult, I would venture to request your Lordship to endeavour to obtain from the different authorities on this continent, vocabularies of the dialects spoken by the aborigines in the different districts in their vicinity. It would be especially desirable that vocabularies of the languages on the northern coast should be collected; for it is evident that, if one of these dialects should be found to coincide with one of those spoken on the southern coast, then the line of migration from one point to the other might be considered to be very nearly determined. The map which I have now the honour to transmit, and which shows (approximately only) the range of nearly all the southern dialects, affords very strong presumptive evidence that this continent was peopled from the northward, and that the lines of migration were along the coast and the great water drainages of the country.

I think it proper to add, that in all the vocabularies which

I have transmitted from South Australia, one common system of orthography has been adopted; and that the different writers of the vocabularies, having previously agreed upon one common method of representing sounds, has rendered these records much more complete and valuable than they would otherwise have been.

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V.—*Some Remarks upon the Freezing of Streams in North America, in connexion with the supposed Congelation of their Sources in High Latitudes.* By ALEXANDER C. ANDERSON, H.H.B.C.S.

AT the Newcastle meeting of the British Association, Captain Washington, upon reading Professor Von Baer's communication respecting the frozen ground of Siberia, made allusion to an adventure of the Baron Wrangel's, near Yâkutsk;\* and inferred that the members of the Hudson's Bay Company must, in their frequent journeys, have encountered similar adventures, tending to the same conclusion—namely, the freezing of the sources even of considerable streams, in high latitudes, during the winter season.

Though far from seeking to invalidate Baron Wrangel's statement, I cannot but think that the inference deduced from it is incorrect. Circumstances nearly similar (though on a far less conspicuous scale) have occurred to myself and others who are in the habit of travelling during winter in this country; but every instance that I have met with or heard of may, I conceive, be referred to the following simple explanation.

But it is first necessary that attention be directed to the process by which the congelation (for it can scarcely be termed freezing) of rapid streams is effected. To this end, wherever the current runs with any considerable velocity, it is first necessary that the stream become choked with drift ice, first formed in the slack water near the banks, and afterwards disengaged and driven away by the current. Dense packs are thus at length formed; and these, being stopped in different parts by the projecting angles of the shore, are soon consolidated by the cold into a firm and stationary mass; with occasional vacancies, however, owing to the unequal obstruction of the packs. These openings, though in process of time their dimensions become much contracted, are kept from closing by the rapidity of the current, even when the cold is very severe. Were it not for the packs formed and ar-

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\* See 'Narrative of an Expedition to the Polar Sea,' By Admiral F. Von Wrangel. Edited by Lieut.-Col. Sabine, R.A., F.R.S. 2nd edition, p. 36.—Ed.